A Search for Radio Supernovae in Wolf-Rayet Galaxies

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We have recently conducted a search for radio supernovae (RSNe) in a sample of 19 nearby Wolf-Rayet galaxies ($d \lesssim 18$ Mpc) with the Very Large Array (VLA). These dwarf galaxies experience short intense starbursts and show evidence for extraordinary numbers of massive stars, many of which are hidden by dust obscuration. It therefore would be most productive to search for supernovae in the radio, and the likelihood of finding candidate RSNe in these galaxies, compared to normal spirals, should be much higher. Candidate RSNe likely will be of Type IIn, the extremely luminous, long-lived RSNe, which may arise from very massive red supergiant stars ($M \gtrsim 20\ M_{\odot}$), and of which we have very few well-studied examples. Candidates also may be of Type Ib/c, which may arise from Wolf-Rayet stars. The results from such a search will have implications both on stellar evolution theory and the nature of the starburst phenomenon in dwarf galaxies and in general. The observations at 6 and 20 cm were made at two epochs (including VLA archive data) separated by at least 3 months, in A and AnB configuration, to a 6 cm sensitivity limit of $\lesssim 0.3$ mJy (3σ). We report here our initial results of the search.

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